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BULLETIN
OF THE
TORREY BOTANICAL CLUB.

Vol. VII.] New York, August, 1880. **[No. 8.**

§ 63. **Fern Notes.**—In re-arranging the specimens in the "Davenport Herbarium," I noticed quite a number of examples of bifurcation that it may be of interest to place on record.

In *Polypodium vulgare* examples occur with bifid fronds and segments. In *P. Californicum* and *P. falcatum* no examples occur; but in these two species the segments are frequently coarsely and deeply serrate.

In *Notholaena Parryi* an example occurs in which the stipe forks midway and branches into a double frond. Similar examples of "twin-fronds" occur in *Camptosorus*, *Asplenium Trichomanes*, and *Woodsia obtusa*.

In *Cheilanthes Cooperae* one frond forks just above the second pair of pinnae into two divisions nearly three inches long.

Cheilanthes Clevelandii has several specimens of bifid fronds, and *Pellaea atropurpurea*, of bifid fronds and pinnae.

Some sections of *Pteris aquilina* var. *lanuginosa* have bifid pinnae and pinnules.

Scolopendrium and *Camptosorus* especially delight in such manifestations; the former exhibiting some deeply bifurcated fronds, and the latter some curious freaks. Two examples of "twin-fronds," exactly as described by Mr. Tweedy in the BULLETIN, Vol. VII. p. 26, occur, and one in which the long-attenuated apex bifurcates into two long proliferous tips. Mrs. Barnes contributes some curious abnormal forms of this species from Onondaga Co., N. Y.

Asplenium ebeneum, besides its proliferous fronds, *A. montanum* and *A. firmum*, all bifurcate more or less deeply, as do also *Aspidium acrostichoides*, *A. Thelypteris*, and *A. Noveboracense.*

In *A. spinulosum* and varieties, double-fronded, bifurcate and crested forms occur, and also in *Cystopteris fragilis* and *Dicksonia.*

Woodsia glabella has one example of a bifid frond, and in the *Botrychia* all sorts of freaks occur—sterile sections transformed into fertile, and vice versa; bifid stalks; and extra fertile spikes growing either out from the main stalk or from the axils of the sterile divisions.

The Herbarium is now in perfect order, with an "Index" for reference. The collection contains nearly 600 mounted sheets, and over 2,000 specimens, but is deficient in *root specimens* of the following: *Gymnogramme hispida*, *Notholaena ferruginea*, *N. Hookeri*, *N. nivea* (of which I have some fragments collected on Lone Mountain, New Mexico, early in June, 1880, by Wm. M. Courtis), *N. tenera*, *Cheilanthes Wrightii*, *C. Lindheimeri*, *C. leucopoda*, *Pellaea aspera*, *P. pulchella*, *P. flexuosa* and *P. ternifolia.* *Complete root specimens* of any of these are desired and solicited.

Since the publication of my Catalogue, many new forms have been added, and I have to thank Mr. Lemmon for *Aspidium Mohrioides* ; Dr. J. Schneck for *Aspidium Oreopteris*; J. Donnell Smith for a fine series of specimens of *Aspidium conterminum*, var *strigosum*; W. G. Wright and the Parish Bros. for additional and fine series of specimens of *Cheilanthes viscida*.

Notholaena Lemmoni has not yet been added to the Herbarium. *N. nivea* appears to have been collected nearly simultaneously in Arizona by Lemmon (vide June BULLETIN) and in New Mexico by Courtis. GEO. E. DAVENPORT.

§ 64. **Artificial Synopses.**—Since the adoption of the natural system of classification, recourse has been had to "artificial keys," to a greater or less extent, for the purpose of facilitating the determination of species. There is a tendency to overlook the natural relationship of plants, growing out of the use of these keys, which can only be avoided by a careful study of the principles of classification in general and its application to botany in the morphological and structural relations of the members of the vegetable kingdom.

A wrong impression is often tacitly conveyed to students just commencing the study, namely, that the chief end of the "analysis of plants" is to determine botanical names, when this is really a matter of convenience of secondary importance ; while the first object should be *the determination of the structural characteristics of the plant in hand*, which at once distinguish it from all others, and indicate its relation and position in the vegetable kingdom. If the more modern plan of imparting botanical instruction were rigidly carried out, namely, requiring the student to write *in accurate botanical language* the diagnostic characters of every plant studied in the preliminary course of instruction (say 50 or 75 plants), the number of those whose early habits of study will remain a stumbling-block in the further pursuit of botanical knowledge would be vastly decreased, and the number of those who become intensely enthusiastic in the science, and capable of thorough and systematic post-graduate study would receive a corresponding increase. To such, artificial keys are useful in economizing time, while the knowledge of structural relationship will not be concealed or overlooked in the abbreviated process.

A "manual" for beginners is useful in proportion as it is accurate and easy of application. Some of our botanical orders containing our most common plants are difficult for beginners chiefly for the reason that the generic and specific "synopses" of the text-books are founded on characters not readily determined, or are of themselves difficult of application, requiring a vast amount of searching to find the appropriate division. The following synopses may be found useful in the determination of species in a few of these difficult orders after the characters of the plants are carefully noted. I have found it convenient in studying the *Salicaceae* to mark those species whose catkins appear before the leaves, with numbers wired to the plant ; greater accuracy is thus insured and the variations in the same plant from year to year may be also studied with profit.